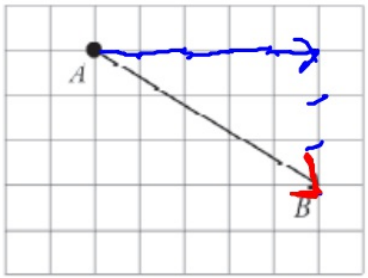
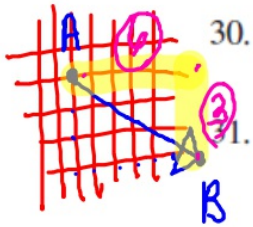
29. Write the vector $\overrightarrow{AB}$ in component form.



$\langle 5, -3 \rangle$

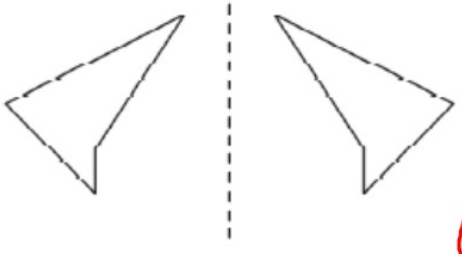
$(x_2 - x_1)$ $(y_2 - y_1)$



30. Draw the vector $\langle 6, -3 \rangle$ on the coordinate plane. Find its magnitude to the nearest tenth.

$3\sqrt{5}$

31. Tell whether the transformation appears to be a reflection. Explain.



Yes
The image is (appears to be) flipped over the line of reflection

magnitude = distance

two points

$$\sqrt{(x-x)^2+(y-y)^2}$$

vector $\langle x, y \rangle$
$(x-x)$ $(y-y)$

$$\sqrt{6^2 + (-3)^2}$$

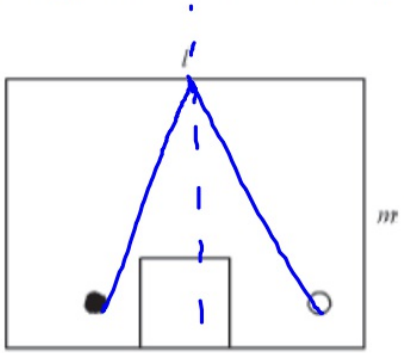
x^2 y^2

$\sqrt{36+9}$

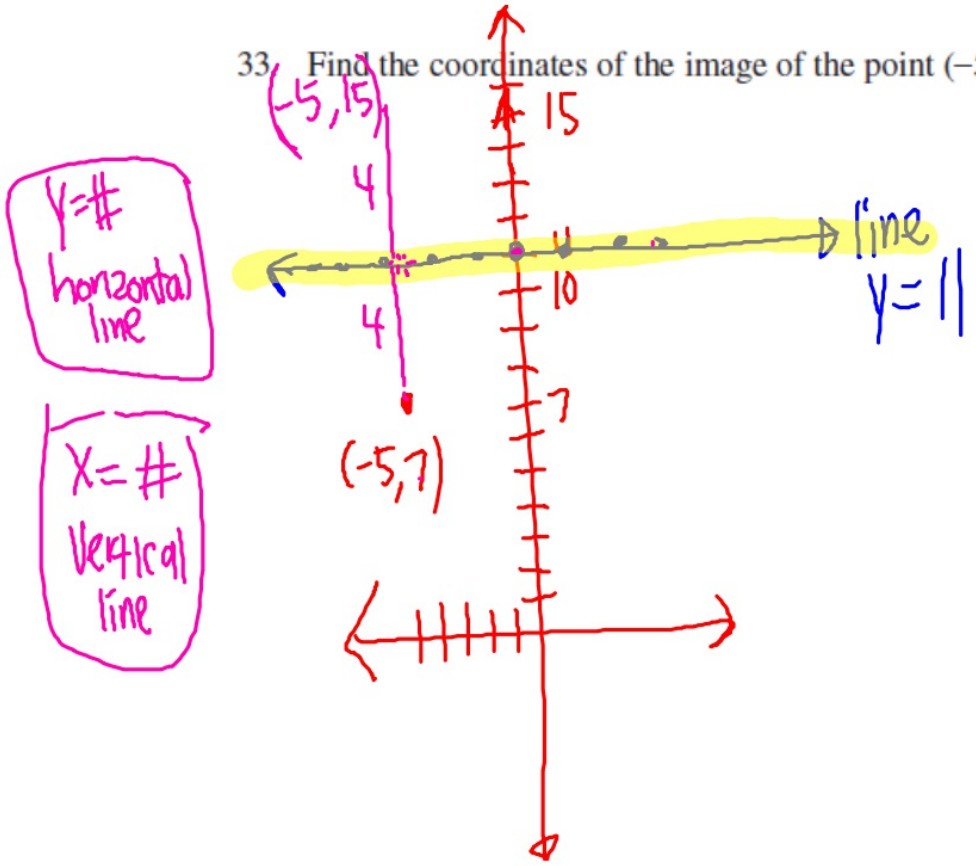
$\sqrt{45}$

$3\sqrt{5}$

32. In miniature golf, Sarai wants to hit the golf ball (white circle) into the hole (black circle). She wants to accomplish this in one stroke, as easily as possible. Which statement best describes what she should do?



33. Find the coordinates of the image of the point (−5,7) when it is reflected across the line $y = 11$.



y=# horizontal line

x=# vertical line

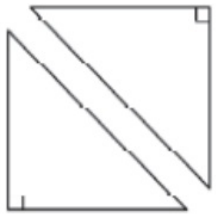
(x,y) reflection over

(x,-y) x axis

(-x,y) over y axis

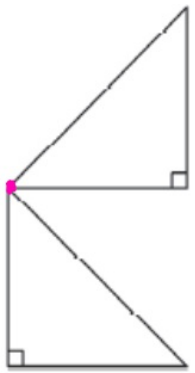
(y,x) over the line y=x

34. Tell whether the transformation appears to be a translation. Explain.



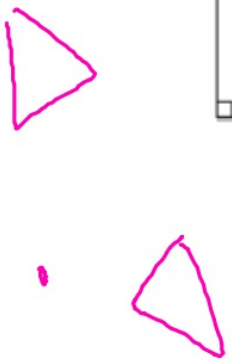
No, look like Reflection

35. Tell whether the transformation appears to be a translation. Explain.



No, not all points move exactly the same distance

It's a rotation

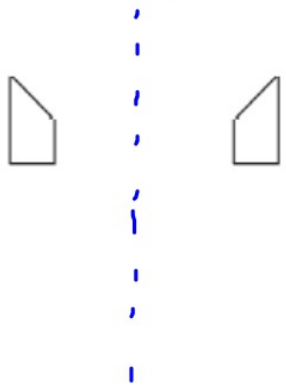


36. Translate the triangle with vertices $A(3, 4)$, $B(2, -1)$, and $C(4, 12)$ along the vector $\langle -1, 3 \rangle$. Find the coordinates of the new image.

A' 3-1, 4+3
(2,7)

translation
(add/subtract to original points (preimage)

37. Tell whether the transformation appears to be a rotation. Explain.



no, it is a reflection

38. Rotate ΔRSQ with vertices $R(4, -1)$, $S(5, 3)$, and $Q(3, 1)$ by 90° about the origin.

R'(1,4)

39. ΔABC has vertices $A(3, 1)$, $B(4, 5)$, and $C(2, 3)$. Rotate ΔABC 90° counterclockwise about the origin and then reflect it across the x-axis.

A'(-1,3) → A''(-1,-3)

40. On a sketch of a mural, 3 inches represents one foot in the mural. A door in the sketch is 2 inches wide by 5 inches high. What is the perimeter of the door in the mural expressed in inches?

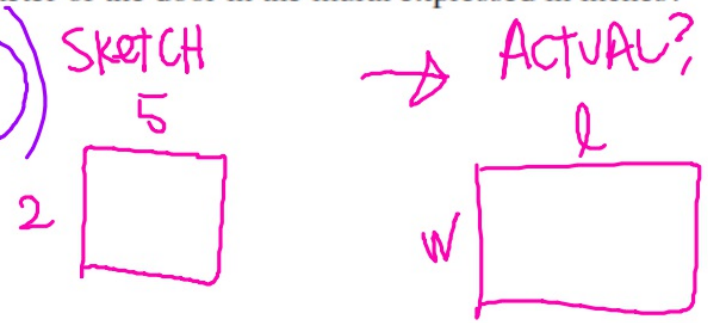
Rotation (counterclockwise)

90° (-y, x)

(change the sign for y and then write it where x usually goes, write x where y usually goes)

Rotation 180°

(just (-x, -y) change both signs)

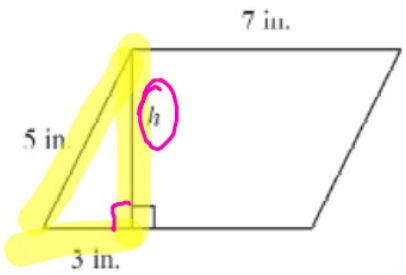


SF = $\frac{3 \text{ in}}{12 \text{ in}} = \frac{1}{4}$

$\frac{2}{w} = \frac{1}{4}$ $\frac{5}{l} = \frac{1}{4}$

w=8 l=20

41. Find the area of the parallelogram.



$A = b \cdot h$ $b=7$ $h=4$

solve for h

$3^2 + h^2 = 5^2$

$h^2 = 25 - 9$

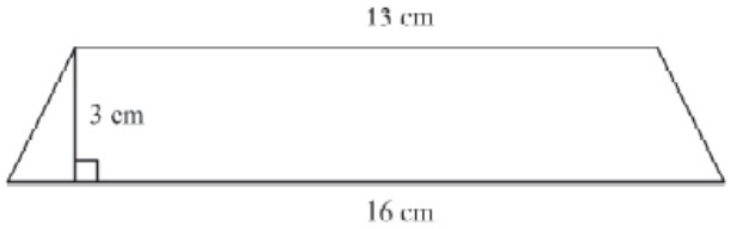
$h^2 = 16$ $h=4$

or 3 4 5

$A = 7 \cdot 4$

$= 28 \text{ in}^2$

42. Find the area of a trapezoid, in which $b_1 = 13$ cm, $b_2 = 16$ cm, and $h = 3$ cm.

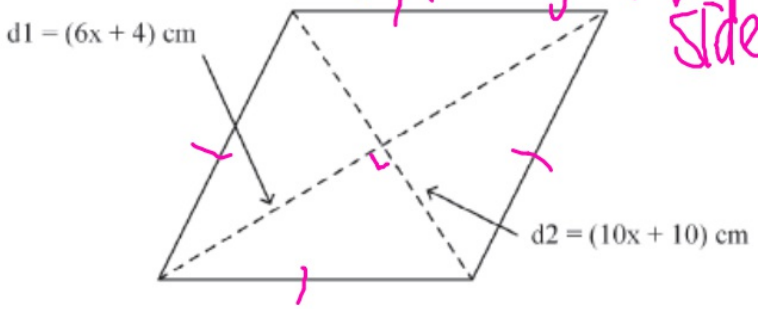


$A = \frac{1}{2}(b_1 + b_2)h$

$A = \frac{1}{2}(13+16)(3)$

$A = 43.5 \text{ cm}^2$

43. Find the area of the rhombus.



Rhombus is a parallelogram 4 equal sides

$A = \frac{1}{2} d_1 \cdot d_2$ or $A = b \cdot h$

★ multiply diagonals ★

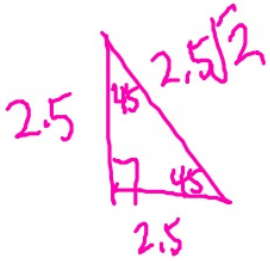
$\frac{1}{2}(6x+4)(10x+10)$

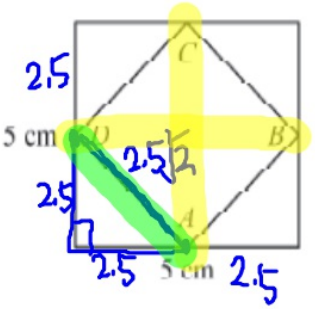
$6x \cdot 10x + 6x \cdot 10 + 4 \cdot 10x + 4 \cdot 10$

$\frac{1}{2}(60x^2 + 60x + 40x + 40)$

$30x^2 + 50x + 20$

44. The vertices of square *ABCD* are the midpoints of the sides of a larger square. Find the perimeter and the area of square *ABCD*. Round to the nearest hundredth.





perim.

$4(2.5)\sqrt{2} = 14.14$

$(2.5\sqrt{2})(2.5\sqrt{2}) = 12.5\ cm^2$

or $\frac{1}{2}d_1 \cdot d_2 = 5.5 \cdot \frac{1}{2}$

45. A store sells circular rugs in three different sizes. The rugs come in diameters of 8 ft, 12 ft, and 16 ft. Find the areas of the three different sizes of rugs. Use 3.14 for π and round answers to the nearest tenth.

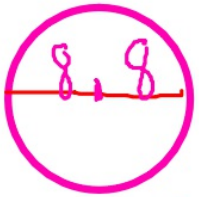
$d = 8$, $r = 4$

$4^2\pi = 16\pi = 16 \cdot 3.14$ → $50.2\ ft^2$

$d = 12$

$113\ ft^2$

$d = 16$



$201\ ft^2$

area of ⊙

πr^2

circumference

$\pi \cdot d$ or $2\pi r$

polygon-radius
center

apothem is ⊥ to side from the center of the polygon

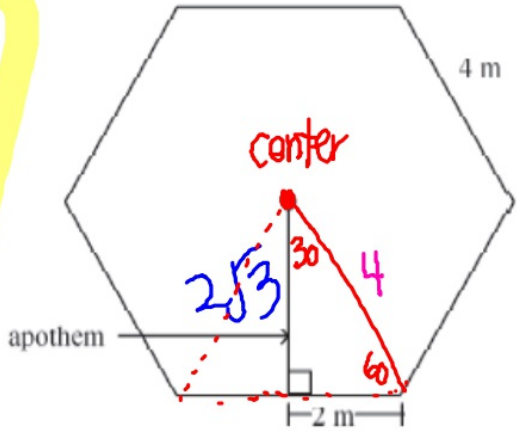
Area Regular polygons

$\frac{1}{2} a \cdot p$

apotherm perimeter

46. Find the area of a regular hexagon with side length 4 m. Round to the nearest tenth.

Hexagon
apothem = $\frac{1}{2}$ side $\sqrt{3}$
the radius = side



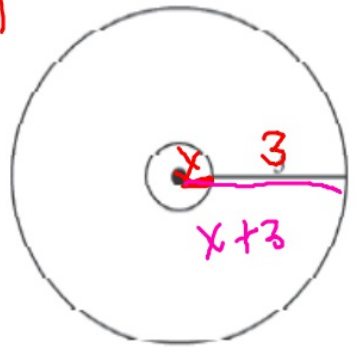
$a = 2\sqrt{3}$

$p = 4 \cdot 6$

$\frac{1}{2} \cdot 24 \cdot 2\sqrt{3} = 24\sqrt{3}\ m^2$

47. Two circles have the same center. The radius of the larger circle is 3 units longer than the radius of the smaller circle. Find the difference in the circumferences of the two circles. Round to the nearest hundredth.

equilateral



small ⊙ $C = 2x\pi$

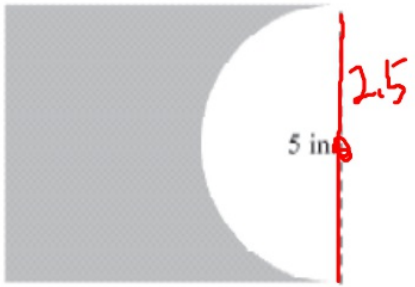
big ⊙ $C = 2(x+3)\pi = 2x\pi + 6\pi$

Difference

$2x\pi$

$6\pi = 6 \cdot 3.14 = 18.84$

48. Find the shaded area. Round to the nearest tenth.



49. The base length of the triangle with vertices $A(1, 1), B(9, 1)$, and $C(5, 5)$ is multiplied by 2. Describe the effect of change on the area.